Prevention of Drowning

The Time Is Now

MAGINE A DISEASE THAT KILLS NEARLY 200 000 children and adolescents around the world each year, and for which even the most advanced high tech medical care is nearly ineffective in preventing mortality. Imagine this disease having a 50% case-fatality ratio. Imagine this disease affecting children in high-income developed countries as well as in the developing world. The attention such a disease would get from the World Health Organization, the National Institutes of Health, and others is likely to be great. Now imagine that we could prevent most of those deaths with an intervention available now in most communities in the world.

See also page 203

There is such a disease: drowning. Drowning caused 186 000 deaths of children and adolescents globally in 2002. It is the second most common cause of injury death for persons aged 0 to 14 years in the United States and is the leading cause of overall death (not just injury deaths) in children younger than 15 years in countries such as China and Bangladesh.

Medical care for the most severely ill submersion patients has little effect on survival. Many studies have shown that by time the child with submersion arrives in the emergency department at even our most advanced children's hospitals, the die is cast.¹⁻³ Children who arrive with spontaneous respiration will generally do well, with nearly all surviving and most having good neurological outcomes. In contrast, those arriving with ongoing cardiopulmonary resuscitation will very likely die or be left with substantial neurological sequelae. Intensive care, intracranial pressure monitoring, and other high tech interventions do little to significantly alter these outcomes.

It is against this setting that the article by Brenner and colleagues4 in this issue of the Archives must be viewed and why it is so important. This widely anticipated casecontrol study found that formal swimming lessons were strongly associated with a lower risk of drowning for preschool children aged 1 to 4 years. This is the age group at greatest risk of drowning and for which the idea of swimming lessons has been most controversial. Until now, there were no data on the protective effect of swimming lessons in this age group. There were, however, many concerns that such lessons would not only be ineffective at this age, but could be harmful. Decreasing children's natural fear of water and giving parents a false sense complacency when their children are around water were believed to be substantial adverse effects of swimming lessons. These theoretical concerns now must be weighed against the strong association of swimming lessons with lower risk of drowning among young children.

The Brenner et al study also reports on the potential protective effect of swimming lessons in older children and adolescents. The point estimate also indicates a strong association with lower risk of drowning in this age group, but the confidence intervals are wide, at least in part because of the small sample size. I believe that a larger study to examine the effect in this age group is warranted because bringing clarity and resolution to this question is so important in determining policy and potentially preventing death. While all might agree that older children should learn to swim, strong data on the effectiveness of an intervention is often necessary for policy change.

The wonderful thing about this intervention is that it is highly feasible, and feasible pretty much anywhere in the world without the need for Olympic-sized swimming pools. Rahman and colleagues in Bangladesh, with help from the Royal Australian Life Saving Society, have taught a cadre of individuals from local communities to teach swimming lessons in their communities. Using bamboo barriers to create safe swimming areas in lakes, ponds, and streams, they have taught thousands of children in Bangladesh to swim at a cost of less than \$5 per child.

Other interventions to prevent drowning are also important, such as pool fencing, ⁷ use of personal flotation devices, ⁸ and supervised swim areas. ⁹ Swimming lessons should not replace these other strategies nor should they substitute for adult supervision and vigilance. However, formal swimming lessons offer an opportunity to make a real difference in communities around the globe to prevent the sound of happy children splashing in water from turning into the wail of an ambulance siren or the sound of a parent crying in grief.

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Financial Disclosure: None reported.

REFERENCES

- Kyriacou DN, Arcinue EL, Peek C, Kraus JF. Effect of immediate resuscitation on children with submersion injury. *Pediatrics*. 1994;94(2 pt 1):137-142.
- Quan L, Kinder D. Pediatric submersions: prehospital predictors of outcome. Pediatrics. 1992;90(6):909-913.
- Graf WD, Quan L, Cummings P. Outcome of children after near drowning. *Pediatrics*. 1998:101(1 pt 1):160-161.
- Brenner RA, Taneja GS, Haynie DL, et al. Association between swimming lessons and drowning in childhood: a case-control study. Arch Pediatr Adolesc Med. 2009; 163(3):203-210
- American Academy of Pediatrics Committee on Sports Medicine and Fitness and Committee on Injury and Poison Prevention. Swimming programs for infants and toddlers. Pediatrics. 2000;105(4 pt 1):868-870.

- Water safety programme. Centre for Injury Prevention and Research Bangladesh Web site. http://www.ciprb.org/ciprb_activities.html#community_safety. Accessed November 26, 2008.
- Thompson DC, Rivara FP. Pool fencing for preventing drowning in children. Cochrane Database Syst Rev. 2000;(2):CD001047.
- Bennett E, Cummings P, Quan L, Lewis FM. Evaluation of a drowning prevention campaign in King County, Washington. *Inj Prev.* 1999;5(2):109-113.
- Centers for Disease Control and Prevention. Nonfatal and fatal drownings in recreational water settings, United States, 2001-2002. MMWR Morb Mortal Wkly Rep. 2004;53(21):447-452.

Alcohol-Branded Merchandise

The Need for Action

REVENTING EARLY INITIATION OF ALCOHOL USE is an important public health goal. Alcohol use causes between 4500 and 5000 deaths per year among persons younger than 21 years. ^{1,2} The earlier young people begin drinking, the more likely they are to experience alcohol-related problems and addiction later in life. Young people who begin drinking before age 15 years are substantially more likely to become alcohol dependent than those who initiate at age 18 years or older. ³ These early initiators are estimated to be 7 times more likely to be in a motor vehicle crash after drinking and at least 10 times more likely to experience alcohol-related violence at some point in their lives than those who wait until they are 21 years of age. ⁴

See also page 211

Even after controlling for key proximal factors, longitudinal studies have found that greater likelihood of underage drinking is associated with youth exposure to various forms of alcohol marketing, including television beer advertisements⁵⁻⁷ and alcohol advertisements in magazines, ^{6,7} on billboards, ^{7,8} and other outdoor structures, such as bus shelters, storefronts, bars, restaurants, and liquor stores, ⁸ and on beer displays in retail outlets and concession stands selling beer at sporting events. ⁶ Per capita spending on alcohol advertising in individual media markets is also associated with underage drinking, ⁷ as is exposure to alcohol use in movies. ⁹

As McClure et al¹⁰ report in this issue, several studies have also found a strong relationship between ownership of alcohol-branded merchandise (ABM) and underage drinking. In the first national study of ABM ownership, McClure and colleagues estimate that between 2.1 and 3.1 million adolescents own ABM. Their findings strengthen the evidence that suggests that there is a causal relationship between ownership of ABM and initiation of drinking as well as underage binge drinking.

What then are the policy options? First, overall youth exposure to alcohol marketing must be reduced. Studies by the Center on Alcohol Marketing and Youth have estimated that the average television-watching youth aged 12 to 20 years saw more than 300 alcohol advertisements on television in 2007. Even after substantial declines in magazine advertising for alcohol in recent years, youth were still disproportionately exposed and thus more likely than adults per capita to see magazine advertising for beer, alcopops, and distilled spirits in 2006. In 2006, more than one-third of alcohol advertisements aired on the radio during

programming more likely to be heard by youth per capita than by adults; these advertisements generated more than half of youth exposure to radio alcohol advertising.¹³

In 2003, under pressure from the Federal Trade Commission, brewers and distillers strengthened their self-regulatory codes, moving the ceiling for underage audiences of their advertising from 50% to 30%. Youth exposure continues at high levels, however, and 20 state attorneys general¹⁴ and the National Research Council and Institute of Medicine¹⁵ have argued that the alcohol industry's standard is insufficient and should be lowered to 15% of audiences aged 12 years and older.

Second, more effective means must be found for keeping ABM out of the hands of young people. While the distilled spirits industry's code states that such merchandise should not be "intended for use primarily by persons below the legal purchase age," 16 when oversized t-shirts are widely popular among teenagers, it is difficult to assess whether or not these articles of clothing are intended for use by persons below the legal purchase age. The brewers' code stipulates that such merchandise should be distributed "only at licensed retail establishments or where distribution is limited to those over the legal drinking age." ¹⁷ From the evidence presented by McClure et al, these self-regulatory provisions have been insufficient.

Based on research showing that branded merchandising influenced youth smoking, ¹⁸ the 1998 Master Settlement Agreement ¹⁹ between the tobacco companies and state attorneys general put into place a complete ban on any apparel or other merchandise bearing a tobacco brand name. There is no equivalent vehicle for such a policy regarding ABM. However, 8 states already ban distribution of ABM predicated on product purchase, ²⁰ and in most states, attorneys general or other state-level policymakers have the power to enact further restrictions or bans.

At the national level, the Federal Trade Commission has released a series of reports on alcohol industry self-regulation. 14,21,22 The most recent one gave the industry high marks for its compliance, but only assessed performance at the company, not the brand, level. McClure and colleagues, in contrast, recognizing that marketing is brand-specific, report data on ABM ownership by brand. They hypothesize that cognitive dissonance between ABM ownership and abstinence from alcohol contributes to youth drinking. This dissonance is brand-specific, as are the positive expectations about drinking produced by alcohol marketing. Since the various brands produced by a single alcohol company often target different demographics, the Federal Trade Commission's failure to ana-